

大同大學 108 學年度(寒)轉學入學考試試題

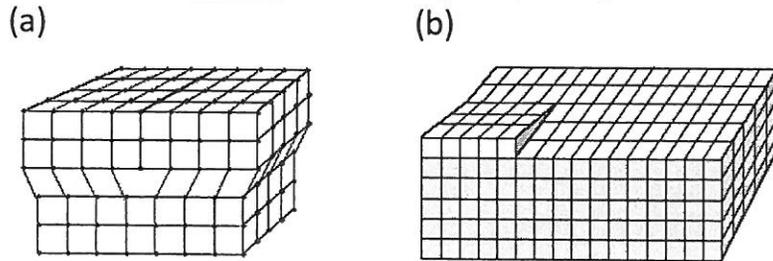
考試科目:材料導論

系別:材料工程學系

第 全 頁

註:本次考試 不可以參考自己的書籍及筆記; 不可以使用字典; 不可以使用計算器。

1. Identify the **defect** in below figure (5%*2)



2. Determine whether one item is **more likely to crystalline** than the other (4%*3)

- (a) small molecular weight or large molecular weight
- (b) linear polymer or branching polymer
- (c) block copolymer or random copolymer

3. Identify Body-Centered Cubic (BCC) crystal structure. (r : radius of sphere and a : length of cube side) (4%*4)

Crystal Structure	Atom/ unit cell	the relation between r and a	Coordination number	Atomic packing factor (APF)
BCC	(a)	(b)	(c)	(d)

4. Match A-F for (a) steady state diffusion or (b) non-steady state diffusion (2%*6)

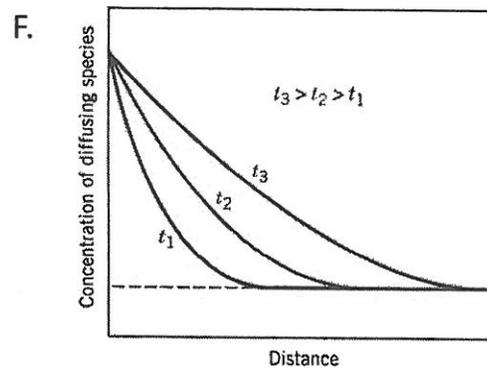
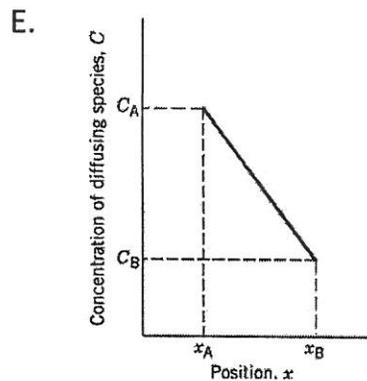
- (a) **Steady state diffusion** _____
- (b) **Non-steady state diffusion** _____

A. The flux is dependent of time

B. The flux is independent of time

C. $\frac{\partial C}{\partial t} = D \frac{\partial^2 C}{\partial x^2}$

D. $J = -D \frac{dC}{dx}$



5. What is the **difference in definition** between homogeneous nucleation and heterogeneous nucleation? (10%)

6. Plot transformation rate versus temperature curve for solidification. (10%)

7. What are the definitions of eutectic reaction and peritectic reaction? (10%)

8. What is the definition of creep? (5%)

9. What is the definition of strain hardening of metals? (10%)

10. What is the driving force for grain growth of polycrystalline solids? (5%)